Citgo Petroleum Corp
Citgo Petroleum Corp - Lake Charles Manufacturing Complex
Sulphur,Calcasieu Parish, Louisiana
Agency Interest Number: 1250

Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Lake Charles Manufacturing Complex – Thermal Area – Title V Initial
Citgo Petroleum Corporation
Sulphur, Calcasieu Parish, Louisiana
Agency Interest Number: 1250
Activity Number: PER19960005
Proposed Permit Number: 2930-V0

I. APPLICANT

Company:
Citgo Petroleum Corporation
Lake Charles Manufacturing Complex
P.O. Box 1562
Lake Charles, Louisiana 70602-1562

Facility:
Thermal Area
4401 Hwy 108 South
Sulphur, Calcasieu Parish, Louisiana
Approximate UTM coordinates are 468.50 kilometers East and 3338.50 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

Citgo Petroleum Corporation (CITGO) operates a petroleum refinery in Lake Charles, Louisiana. The Lake Charles Manufacturing Complex (LCMC) processes both domestic and foreign crude oils into sulfuric acid, benzene, propane, ethane, sulfur, gasoline, distillate and residual oil, propylene, coke, kerosene, lube oils and other miscellaneous petrochemical products. CITGO proposed to consolidate the various state permits with a Title V Consolidated Permit. An Initial Part 70 Consolidated Refinery Operating Permit was submitted by CITGO for the entire LCMC in October, 1996. To facilitate the permitting approval process, CITGO is submitting multiple operational area permits for the LCMC. There will be seven (7) operational area permits in total for the LCMC.

Title V Area	Description
Utilities	Newly created Title V Area including cooling towers, flares, and rental equipment
CLAW	Formerly titled CIT-CON, includes furnaces, storage tanks,

	flare, and other miscellaneous sources
Thermal	Includes furnaces, powerhouse boilers, Coker I Unit, COP Unit, and other miscellaneous sources
Reformer	Includes furnaces, Coker II Unit, CCR Vent, and other miscellaneous sources
AAT	Includes Sulfur Recovery Units, Tail Gas Units, Acid Plant, Thermal Oxidizer, and other miscellaneous sources
CAT	Includes furnaces, FCCU Vents, and other miscellaneous sources
Logistics	Includes storage tanks, wastewater emissions, marine loading and WWTP flares, and other miscellaneous sources

Permit No. 2714-V1, dated July 29, 2003, and the following State approved permits will be completely superseded by this Thermal Area Title V permit and will no longer be applicable once the new operating permit is issued:

- Permit No. 220, dated October 30, 1973. Fuel Oil Conversion
- Permit No. 254, dated December 18, 1973. Fuel Oil Conversion (1% Sulfur)
- Permit No. 311, dated May 2, 1974. Reactivation of Deasphalting Unit
- Permit No. 737, dated May 20, 1977. Modification-"D" Topping Unit
- Permit No. 2595, dated February 12, 1999. C Topper/Straight Run PPR

The following permits will be partially superseded by this Thermal Area Title V permit and will remain active until other sources within these permits are fully covered by area wide Title V permits:

- Permit No. 1168R, dated August 10, 1979. New "C" Reformer And Refinery Modification
- Permit No. 1594, dated July 27, 1981. New Coker, Unicracker, and Refinery Modification
- Permit No. 1770T, dated September 22, 1982. Use TAC monitoring sites
- Permit No. 2797-V0, dated September 9, 2002. CVEP

CITGO submitted timely applications from the initial Part 70 permits and continues to operate pursuant to the "application shield" provided in the program.

CITGO LCMC is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the LCMC. These include:

Permit No.	**Unit or Source**	**Date Issued**
2797-V0	CVEP	09/09/02
2810-V1	Tier 2 – Cat Gasoline Hydrotreaters	10/01/02
2714-V1	Coker I Unit	07/29/03
74-V0	ALCOH Unit	12/22/04

2908-V0	CAT Area	04/28/05
2715-V1	Mixed Xylenes Unit	07/27/05
2796-V3	Logistics Area	09/16/05
2935-V0	AAT Area	10/17/05

In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit No.	Unit or Source	Date Issued
72	H-Oil Unit	07/27/71
220	Fuel Oil Conversion	10/30/73
254	Fuel Oil Conversion (1.0% Sulfur)	12/18/73
310	LDPE Expansion	May 1974
311	Reactivation of Deasphalting Unit	05/02/74
456	LDPE Expansion	May 1975
737	Modification-"D" Topping Unit	05/20/77
796	Polyethylene Plant Expansion	09/07/77
1168R	New "C" Reformer and Refinery Modification	08/10/79
1594	New Coker, Unicracker, and Refinery Modification	07/27/81
1770T	Use TAC monitoring sites (alter permit 254)	09/22/82
0520-00016-01	ENCON I Project	11/10/88
2003(M-1)	Isomerization Unit	02/21/01
2131	C Reformer Benzene Recovery	04/20/92
2173	Inert Gas Handling	01/04/93
2204	Steam Enhancement Project	04/22/93
2215	Sour Water Surge Tank (CIT-CON)	09/14/93
2308(M-1)	Cat Feed Hydrotreater	02/21/01
2403	MEK Solvent Dehydration	08/10/96
2595	C Topper/Straight Run PPR	02/12/99
2615(M-1)	C Reformer Optimization Project	10/24/01

In addition, PSD Permits PSD-LA-180 (07/19/79), PSD-LA-222 (01/21/80), PSD-LA-577 (04/22/93), and PSD-LA-691 (09/09/02) were also issued to the Thermal Area of the LCMC.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application was submitted on October 1, 1996 requesting a Part 70 operating permit for the CITGO LCMC. The application was subsequently revised on December 30, 2004. Additional information dated June 3 and 13, 2005, and January 5, 6, and February 10, 2006 was also submitted.

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Project

The primary objectives of this permit application are to:

- Obtain an air emissions cap for process furnaces
- Obtain an air emissions cap for boilers (normal and alternate operating scenarios)
- Obtain an air emissions cap for process water tanks
- Identify and reconcile all existing air emission sources
- Obtain an operating permit for Pressure Protection Remediation (PPR) projects and re-rating of Process Safety Management (PSM) relief systems to comply with OSHA regulations
- Obtain non-PSD increases in firing rates of A- and B- Topping furnaces

The Thermal Area consists of the following process units:

- Three (3) Topper Units (A, B & C) – process crude oil by separating it into various fractions through the distillation process.
- Two (2) vacuum units (E-1 and E-201) – remove the remaining gas oils from the resid from the Topping units using a distillation process.
- The Feed Preparation Unit - stabilizes naphtha feed streams from the Topper Units, various other hydroprocessing units, and purchased feed.
- The Straight Run Fractionation (SRF) Unit – processes light naphtha feed from the Feed Preparation Unit by separating various fractions from the feed through distillation.
- The Coker I Unit – converts heavy bottoms from the Topper Units and Vacuum Units into gasoline range naphthas, gas oils, petroleum coke and other products.
- The Powerhouse Unit – consists of 11 gas-fired boilers in the refinery Powerhouse that are utilized to generate steam for various processes at LCMC.

Proposed Permit

Permit 2930-V0 will be the initial Part 70 operating permit for the **Thermal Area**.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	553.96	234.34	- 319.62
SO_2	8339.91	3361.49	- 4978.42
NO_X	9134.56	8544.69	- 589.87
CO	601.72	1948.91	+ 1347.19*
VOC	179.71	382.09	+ 202.38*

* The emission increases reflect corrected emission factors, updated calculations, speciation of pollutants present but not specified in previous applications or permitting activities, and increases in firing rates of A- and B-Topper furnaces that do not trigger PSD.

IV REGULATORY ANALYSIS

See Table 2 in Section XI. of the permit.

Prevention of Significant Deterioration/Nonattainment Review

The PM_{10}, SO_2, NOx, CO, and VOC emission increases will not exceed any PSD thresholds. Accordingly, PSD is not applicable to this permit. However, the permit includes previously issued specific conditions (including the application of Best Available Control Technology) from prior PSD permits.

The total emission impact from the A and B-Topper furnace firing increases are shown in the following table:

Pollutant	Actual Average Emissions (tpy) before projects	Proposed Emissions after projects	Project Related Increases(Proposed – Actual) (tpy)	PSD Significance Threshold (tpy)
PM_{10}	29.9	31.2	+ 1.3	15
SO_2	140.9	147.1	+ 6.2	40
NO_X	550.5	574.9	+ 24.4	40
CO	330.3	344.9	+ 14.6	100
VOC	21.6	22.6	+1.0	40

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Streamlined Equipment Leak Monitoring Program

It is required that the CITGO Thermal Area comply with a streamlined equipment leak monitoring program. Compliance with the streamlined program shall serve to comply with each of the fugitive emission monitoring programs being streamlined.

For the CITGO Thermal Area, fugitive emissions are subject to the requirements of 40 CFR 63 Subpart CC, 40 CFR 60 Subpart GGG, Louisiana Refinery MACT (LAC 33:III.5109.A), and LAC 33:III.2122. Among these regulations, Louisiana Refinery MACT is the overall most stringent program. Therefore, fugitive emissions shall be monitored as required by this program (Louisiana Refinery MACT).

Unit or Plant Site	Program Being Streamlined	Stream Applicability	Overall Most Stringent Program
Thermal Area	Louisiana Refinery MACT	≥ 5% VOHAP	Louisiana Refinery MACT
	40 CFR 63 Subpart CC	≥ 5% VOHAP	
	40 CFR 60 Subpart GGG	≥ 10% VOC	
	LAC 33:III.2122 – Fugitive Emission Control for Ozone Nonattainment Areas and Specified Parish	≥ 10% VOC	

MACT Requirements

The Thermal Area is a major source of toxic air pollutants. State Chapter 51 MACT Standards apply. CITGO meets MACT requirements by complying with the Louisiana Refinery MACT Determination through the Louisiana Fugitive Emission Consolidation program for the project fugitives. Thermal Area meets MACT by complying with 40 CFR 63 Subpart CC.

Air Quality Analysis

Impact on air quality from the emission of the proposed operating area will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond the industrial property. Results of the air dispersion modeling are below.

Pollutant	Time Period	Calculated Maximum Ground Level Concentration ($\mu g/m^3$)	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
NO_X	Annual	84.22	(100)
SO_2	3-hour	920.04	(1300)
	24-hour	258.31	(365)

Annual	47.21	(80)

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

CITGO requests the following permit shields per 40 CFR 60.6(f) and LAC 33:III.507.I: Fugitive Emission Monitoring, 905 Shield, Annual Reporting, Renewal Application, and Process Drain.

Fugitive Emission Monitoring
Compliance with the requirements of the monitoring program identified in the Site Source Agreement for Consolidation of the LCMC Fugitive Emission Monitoring Program (as reflected in the Part 70 specific permit conditions) constitutes full compliance for all applicable fugitive emissions programs being consolidated. The applicable regulations are as listed in the Stringency Table in the Louisiana Fugitive Emissions Program Consolidation Guidelines.

905 Shield
Where a specific regulatory work practice or operational standard applies to an affected facility, compliance with the applicable regulatory work practice or operational standard demonstrates compliance with LAC 33:III.905.

Annual Reporting Shield
Semi-annual reporting periods required by 40 CFR Part 63 Subpart G (HON) and 40 CFR Subpart CC (MRACT) will be on a calendar basis (January 1 through June 30 and July 1 through December 31) for consistency with Title V reporting schedule as allowed by 40 CFR 63.10(a)(5) and 40 CFR 60.19(C)-(e).

Renewal Application Shield
If the permittee (CITGO) submits a timely and complete application for renewal, the existing permit will be considered as administratively continued per La. R.S. 30:2023.C and La. R.S. 49:691.B. In such case, the terms and conditions of this permit shall remain in force until a final permit decision for permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to LAC 33:III.519.A, and is required by LAC 33:III.591.B, the applicant fails to submit by the deadline specified in writing by

the permitting authority any additional information identified as being needed to process the application.

Process Drain Shield
Process drains subject to LAC 33:III.2122 and either 40 CFR 60 Subpart QQQ, 40 CFR 61 Subpart FF or 4CFR 63 Subpart CC shall demonstrate compliance with LAC 33:III.2122 by meeting the applicable control, inspection and repair requirements of 40 CFR 60 Subpart QQQ, 40 CFR 61 Subpart FF or 40 CFR 63 CC.

VI. PERIODIC MONITORING

All periodic monitoring is conducted in accordance with state and federal regulations. See the Facility Specific Requirements Section of the draft permit, or where provided, Table 3 of the draft Part 70 permit for monitoring requirements.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per

year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.